

### **REMARKS/ARGUMENTS**

Claims 1 through 22 were and remain pending in this application. The present Amendment amends claims 1 and 21. Reconsideration and favorable action are respectfully requested.

#### **Rejections Under 35 U.S.C. § 101**

The Examiner rejects all pending method claims (i.e., claims 1-11 and 21-22) under 35 U.S.C. § 101 as not being statutory, with the reason stated that the rejection is because they “do not produce any concrete, useful and tangible result” and “merely manipulate data *and do not, for example, provide any form of output.*” (emphasis added) To advance the prosecution of this case, claims 1 and 21 are both amended in comparable fashion to provide, in the Examiner’s words, a “form of output.”<sup>1</sup> Specifically, as explained in the Specification with respect to Figure 1, error diffusion, which is recited in the pending claims, involves an input signal that is modified by an error signal, with the result being that “[t]he output signal is the data word used by the display system to produce [a] pixel(x,y).” Thus, in a similar manner, by way of example, claim 1 is amended to recite the steps of “outputting a data signal for causing a display corresponding to said at least two pixels in said next row of pixels at least in part in response to said first portion of said error word” and “outputting a data signal for causing a display corresponding to said at least one pixel in said group of pixels to be processed next at least in part in response to said second portion of said error word.” Thus, per the Examiner’s wording, a form of output is now recited in claim 1, and that output is related to various other recitations therein. Thus, Applicant respectfully requests withdrawal of the Section 101 rejection of claim 1, and its dependent claims 2-11, under Section 101. Similarly, because claim 21 is amended in a comparable manner, Applicant also respectfully requests withdrawal of the Section 101 rejection of claim 21, and its dependent claim 22.

#### **Rejections Under 35 U.S.C. § 103(a)**

Various claims are rejected under 35 U.S.C. § 103, and each of those rejections relies first on Nguyen US Patent 6,307,978 (hereafter “Nguyen”). For at least two independent bases stated below, Applicant respectfully requests reconsideration of Nguyen as the basis for rejecting the present claims. Each such reason is discussed below.

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<sup>1</sup> Applicant’s amendments with respect to claims 1 and 11 in connection with Section 101 are made with traverse as Applicant respectfully submits that the Examiner’s statement is not consistent with the law under Section 101. Further, the Examiner is invited to review the claims of the primary reference raised by the Examiner in connection with Section 102, namely, Nguyen US Patent 6,307,978, as it illustrates examples of claims allowed by the Patent and Trademark Office and that also do not satisfy the statement now set forth by the Examiner in connection with Section 101.

1. Nguyen *explicitly* teaches away from the present claims

Claim 1 recites “simultaneously processing image data for at least two pixels in a row of pixels, said at least two pixels comprising a first group of pixels and a last pixel, said last pixel abutting a group of pixels to be processed next in said row of pixels.” By way of example in Figure 3 of the present application, therefore, the “at least two pixels in a row of pixels” are shown in row 18 as pixels 302 and 304, with the presently-claimed “last pixel” therefore being pixel 304. Further, pixel 304, as recited, is “abutting a group of pixels to be processed next in said row of pixels,” where that group is pixels 310 and 312. The Examiner acknowledges that Nguyen does not match this relationship, because the pixels that the Examiner states are “a group of pixels to be processed next” in Nguyen are in a different row, rather than “in said row” as recited in claim 1. However, the Examiner finds that this deficiency is curable by combining Metaxas with Nguyen. Applicant respectfully submits that such combination would not be provided by one skilled in the art due to the explicit teachings of Nguyen.

Nguyen Figure 1 illustrates a pixel 150 and the four weights of a filter 100 used to distribute portions of the error from that pixel 150 to four neighboring pixels – as shown by arrows in Figure 1, three of the weights 120, 130, and 140, are used to distribute different respective portions  $1/16^{\text{th}}$ ,  $5/16^{\text{th}}$ , and  $3/16^{\text{th}}$ , of error to pixels in the row below pixel 150, while the fourth weight 110, is used to distribute a portion  $7/16^{\text{th}}$  of the error to the pixel immediately right, and in the same row as, pixel 150. Thus, in the sense of simply understanding the illustration of Figure 1, each arrow leaving pixel 150 represents a non-zero weight directed to a neighboring pixel. Looking then to Nguyen Figure 5, there are segments 230, and to the left of each such segment there is shown a filter 100 of the type illustrated in Figure 1, so therefore each such filter 100 directs error in the directions described above. However, Nguyen also defines a “cut filter,” which it defines as the filter for the rightmost or last pixel in a segment, that is, the pixel that is immediately before a cut 520 that ends a segment 230.<sup>2</sup> So, in Figure 5, it may be seen that a cut filter 500 is located at the right end of each segment 230. As the arrows of that cut filter 500 demonstrate, and as detailed in Nguyen Figure 6, the cut filter for the last pixel in the segment applies weights to pixels only to the row below it and not to any pixel in the same row. On this point, Nguyen is forcefully explicit. For example, Nguyen emphatically states that the “cut filter must have zero weight for the right neighboring pixel...”<sup>3</sup> In other words, per Nguyen, the filter 500 for the “cut pixel” at the end of the group cannot weight another pixel in the same row. Additionally, Nguyen later states that “this invention does not have any limitation on the cut filters except that the weight for the right neighboring pixel must be zero.”<sup>4</sup> Therefore, Nguyen is quite clear as to its teachings, and those teachings contradict the position taken by the Examiner, as further explored below.

<sup>2</sup> Nguyen, col. 4, lines 4-5.

<sup>3</sup> Nguyen, col. 3, lines 62-64. (emphasis added).

<sup>4</sup> Nguyen, col. 4, lines 20-21. (emphasis added).

A prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness.<sup>5</sup> Further, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).<sup>6</sup> Looking then at the illustrations and text of Nguyen as a whole, Nguyen makes very clear with the strength of its verbiage that for its cut pixel, that is, the last pixel in a group, there is to be no weight to the next neighboring pixel in that row, whereas the present pending claim 1, and in opposite fashion with respect to Nguyen, provides precisely for "propagating ... a second portion of said error word for said last pixel to at least one pixel in said group of pixels to be processed next" and that "group of pixels to be processed next" are in the same row as the last pixel. In other words, in claim 1 weight is provided in the same row in direct contradiction to the express demand by Nguyen that such an act not be taken.

The law on obviousness does not support the present Section 103 rejection. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).<sup>7</sup> The totality of the prior art must be considered, and proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986).<sup>8</sup> Thus, while the Examiner is appreciated in having spent the effort to try to create a combination between Nguyen and one or more other references, this is combining in exactly the way that the Federal Circuit has stated is not permitted for an obviousness determination. Indeed, the Examiner provides a considerable amount of seemingly impressive detail in how Nguyen could be modified, but such a modification completely contradicts Nguyen's express statements and, therefore, is inappropriate in providing a combination that completely refutes the mandate of Nguyen. This is not a case where the prior art Nguyen merely provides various alternatives which are being used to suggest a teaching way; instead, Nguyen is absolutely clear and Applicant respectfully submits, therefore, that Nguyen may not be combined as has been presented by the Examiner. Moreover, claim 1 is evidence of "proceeding contrary to the accepted wisdom" of Nguyen, which therefore is evidence of nonobviousness of claim 1, according to the Federal Circuit's *Hedges* decision, above.

Based on the preceding, Applicant respectfully requests that the rejection of claim 1, and its dependent claims 2-11, be withdrawn, and Applicant further submits that such claims are in condition for allowance. For similar reasons, Applicant respectfully requests that the rejection of independent claim 12, and its dependent claims 13-20, be withdrawn, and Applicant further submits that such claims are in condition for allowance. Lastly, and again for similar reasons, Applicant respectfully requests that the rejection of independent claim 21, and its dependent claim 22, be withdrawn, and Applicant further submits that such claims are in condition for allowance.

<sup>5</sup> MPEP 2145.X.D.1.

<sup>6</sup> See also, MPEP 2141.02.V.

<sup>7</sup> MPEP 2145.X.D.2.

<sup>8</sup> MPEP 2145.X.D.3.

2. Even, *arguendo*, if Nguyen were combined with Metaxas as the Examiner has suggested, the resultant combination does not show all the teachings of claim 1

Claim 1 recites “simultaneously processing image data for at least two pixels in a row of pixels, said at least two pixels comprising a first group of pixels and a last pixel, said last pixel abutting a group of pixels to be processed next in said row of pixels.” The Examiner in combining Nguyen with Metaxas identifies Nguyen pixels 100 and 500 in Nguyen row 510 to show this claim 1 step. However, Applicants respectfully request that the Examiner re-visit Nguyen, as it is submitted that Nguyen cannot “simultaneously” process those two pixels, as detailed below. And, since Nguyen cannot operate in this manner, then the combination of Nguyen and Metaxas does not render claim 1 obvious, that is, the combination does not teach or suggest all of the claim 1 limitations.<sup>9</sup>

A more detailed inspection of Nguyen may be helpful followed by a contrast of how Nguyen does not operate as recited in claim 1. Specifically, Nguyen Figure 2 demonstrates its “parallel process.” That figure demonstrates that two *different* segments 230 are operated upon at a time, that is, by parallel process 240. Returning to Nguyen Figure 5, therefore, the segment 230 to the left of the Figure could be processed at the same time as the segment 230 to the right of the Figure, per Nguyen Figure 2. However, claim 1 recites a particular group of pixels which the Examiner equates to only one Nguyen segment 230.<sup>10</sup> Applicant respectfully submits, though, that within such a given single Nguyen segment, there cannot be simultaneous processing of one of its pixels and the last pixel because the last pixel processing depends on another pixel in that same segment. The Examiner is thanked for his effort in understanding pixel dependency as it appears he has understood that concept in his previous responses where he discussed pixel dependency of a later Nguyen row based on a preceding Nguyen row; however, until now, there has not been a focus on the pixel processing dependency within a single segment (or “group” as that word is used in claim 1) of Nguyen. Given that understanding, Applicant respectfully requests the Examiner consider the following. For example, assume that a Nguyen segment has only two pixels, as shown in Nguyen Figure 5. Quite clearly, pixel 500 cannot be processed “simultaneously” with pixel 100 in that same segment (or “group”) because pixel 500 depends upon the error attributed to it by pixel 100 in that same segment. In other words, pixel 100 in a Nguyen segment must be first processed to determine its error, and then later, and hence not simultaneously, pixel 500 is processed using the error determined from pixel 100 (and from pixels in the higher row as well). Thus, Nguyen does not “simultaneously [process] image data for at least two pixels in a row of pixels, said at least two pixels comprising a first group of pixels and a last pixel,...” as recited in claim 1, and combining Nguyen with another reference such as Metaxas does not overcome this deficiency. Accordingly, claim 1 cannot be rejected based on the combinations of record.

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<sup>9</sup> See, MPEP 2142.

<sup>10</sup> Indeed, the claim 1 language could only be read, in part, on one Nguyen segment as certain claim 1 language prevents a reading that applies simultaneously to multiple Nguyen segments.

Based on the preceding, Applicant respectfully requests that the rejection of claim 1, and its dependent claims 2-11, be withdrawn, and Applicant further submits that such claims are in condition for allowance. For similar reasons, Applicant respectfully requests that the rejection of independent claim 12, and its dependent claims 13-20, be withdrawn, and Applicant further submits that such claims are in condition for allowance. Lastly, and again for similar reasons, Applicant respectfully requests that the rejection of independent claim 21, and its dependent claim 22, be withdrawn, and Applicant further submits that such claims are in condition for allowance.

#### Fees

A Petition for an Extension Of Time of Three (3) Months is filed herewith, necessitating a Petition fee of one thousand and twenty dollars (\$1,020.00). The Commissioner is authorized to charge this Petition fee, and any other fees necessary to effect the present filing, to Deposit Account 20-0668 of Texas Instruments Incorporated.

#### Conclusion

Applicant respectfully requests that a timely Notice of Allowability be issued in this case.

Respectfully submitted,

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**CERTIFICATE OF ELECTRONIC TRANSMISSION**  
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The undersigned hereby certifies that this correspondence is being transmitted via PAIR e-filing, on **April 16, 2007**, to the United States Patent Office.

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